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I, LEANNE MYNOTT, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PQ 5864 for a patent by HEAD START (QLD) PTY. LTD. filed on 25 February 2000.



WITNESS my hand this  
Fourteenth day of June 2000

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**PRIORITY  
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HEAD START (QLD) PTY. LTD.  
(A.C.N. 010 688 294)

**AUSTRALIA**  
*Patents Act 1990*

**PROVISIONAL SPECIFICATION**

Invention Title: OZONE GENERATING APPARATUS

This invention is described in the following statement:

## OZONE GENERATING APPARATUS

### TECHNICAL FIELD

This invention relates to ozone generating apparatus and has particular relevance to apparatus which operates on corona discharge principles, and utilises the phenomenon of oxygen breakdown occurring when electric stress on the surfaces of a conductor exceeds certain values.

### BACKGROUND ART

Ozone is used in a wide range of industrial applications such as in the bottling industry to disinfect bottles, in brewing, by the pharmaceutical industry as a disinfectant, in the manufacture of electric components to oxidise surface impurities to breakdown industrial waste like phenol and cyanide so that they become biodegradable, to oxidise mining waste, and for the treatment of harmful compounds such as heavy metals, ethanol and ascetics. It also oxidises phenolics, pesticides, detergents and aromatic (smelly) compounds, and kills microorganisms and bacteria.

It has also been long recognised that polluted indoor air is a health hazard that causes disease, lost work days and in general reduces quality of life.

Pollution indoors can often exceed outdoor levels and the transmission of respiratory infections in indoor environments continues to be a substantial health concern.

There are many contaminants which contribute to indoor air pollution and the controlled treatment of living environments with ozone will substantially improve conditions.

Excessive levels of ozone can result in the poisoning of humans or animals and it is therefore necessary to control ozone outputs in relation to an environment being treated.

There are numerous enterprises which specialise in the production of ozone generating apparatus and treatments but to date available apparatus has tended to be technically crude, expensive and inefficient.

Our Australian Patent Application Nos. PP8862 and PQ0638

describe ozone generating apparatus primarily designed for the treatment of airspaces.

Ozone is also used for water treatment purposes using what are known as aeration or venturi methods.

5           A typical venturi installation as is known in the art involves the placement of a ozone generating apparatus adjacent to a waterline. Ozone produced by the apparatus is introduced into a waterline using a venturi device placed in a waterline bi-pass from the waterline.

10           It is an object of the present invention to provide an ozone generating apparatus for general purposes and one which is readily adapted for the treatment of water air and other bodies of fluid.

Further objects and advantages of the present invention will become apparent from the ensuing description which is given by way of example.

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#### DISCLOSURE OF INVENTION

According to the present invention there is provided an ozone generator comprising positive (outer) and negative (inner) electrodes separated by an airgap and a dielectric member, wherein the positive and negative electrodes and the dielectric member are co-axial tubular members and the airgap is created between the negative electrode and the dielectric by spacers.

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The spacers may be o-rings mounted on the outer surfaces of the inner electrode.

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The o-rings may be fabricated or moulded from a resilient material.

The air passage may be defined by the tubular dielectric, and the tubular negative inner electrode and the spacers.

Access to the airgap passage may be provided by apertures formed in the inner electrode.

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The peripheral spacers may be set in grooves in the outer surface of the inner electrode.

The inner and outer electrodes may be formed from metal tube.

The dielectric member may be formed from a ceramic or glass materials.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Aspects of the present invention will now be described with  
5 reference to the accompanying drawings in which;

Figure 1 is a side view and partial cross-section of an electrode according to the present invention, and

Figures 2 are cross-sectional drawings of the electrode of figure 1 taken at II:II.

10 With respect to the drawings the present invention provides an ozone generator generally indicated by arrow 1 having positive (outer) and negative (inner) electrodes 2 and 3 respectively separated by an airgap 4 and a dielectric 5.

The electrodes 2, 3 and dielectric 5 are co-axial tubular  
15 members and the airgap 4 is created by spacers 6.

The spacers 6 can be o-ring seals made of a resilient ozone resistant material such as viton, and are set in grooves 7 in the face of the inner electrode 2.

The air chamber 4 is an annular section chamber defined by the  
20 inner walls of the dielectric 5 .

The o-rings 6 and the outer walls of the inner electrode 2. Access to the interiors of the air chamber 4 is provided by apertures 8 and 8a in the walls of the inner electrode 2.

The inner electrode 2 can be connected to incoming and  
25 outgoing airlines 9, 10 respectively.

Plugs 11 prevent the passage of air into the interiors of the inner electrode 2.

When the electrodes 2, 3 are charged and a forced draft of air or oxygen is applied to airline 9 plugs 11 block the air and divert it into the  
30 interiors of the airgap 4 via the apertures 8.

The forced air draft now containing ozone is released to the airline 10 via apertures 8a.

The size and volume of the air gap can be adjusted by altering the spacings of the o-rings and/or their size.

The apparatus described is readily adapted for introducing ozone into fluid pipes or other bodies of water. The apparatus can also be  
5 used as a general purpose ozone generator for air treatment.

Aspects of the present invention have been described by way of example only and it will be appreciated that modifications and additions thereto may be made without departing from the spirit or scope thereof.

DATED this 25th day of February 2000

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**HEAD START (QLD) PTY LTD**  
(A.C.N. 010 688 294)  
By their Patent Attorneys  
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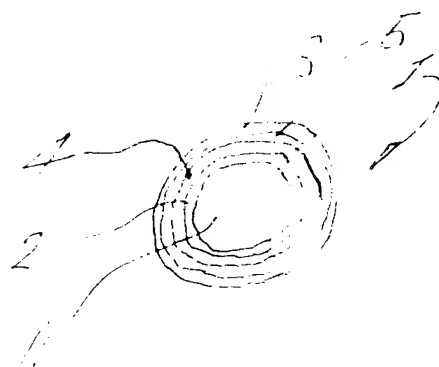
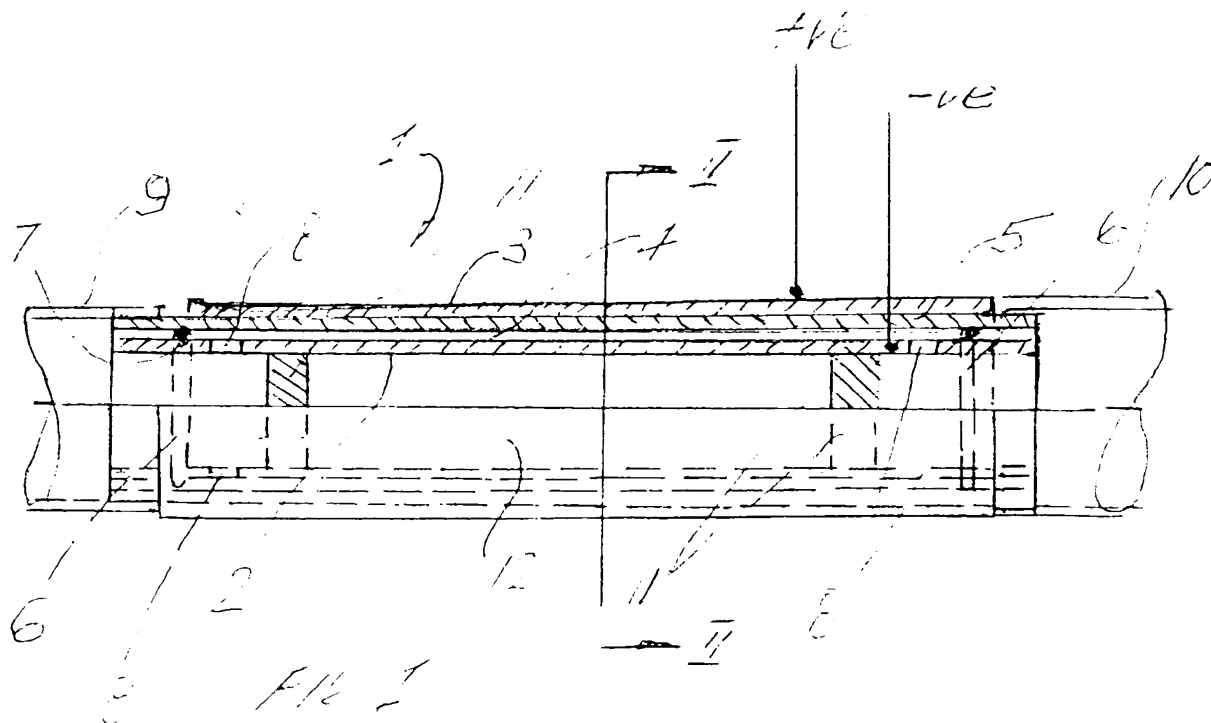


Fig 2

